

Appl. No. 10/747,875
Amdt. Dated March 23, 2005

Attorney Docket No.: ONX-113/DIV
Reply to Office Action of Jan. 11, 2005

REMARKS:

SPECIFICATION AMENDMENTS

The Applicant has amended the first paragraph of the specification to include the language requested by the Examiner. In addition minor typographical errors have been corrected. The Applicant submits that these amendments merely make explicit that which was implicit in the application as originally filed. As such, no new matter has been entered with these amendments.

AMENDMENTS TO THE CLAIMS

To expedite prosecution, the Applicants have canceled claims 1-7 and 14-16. The Applicants reserve the right to pursue the subject matter of the cancelled claims in a later-filed continuation application. Claims 11, 12 and 13 have been amended to correct various informalities. The Applicant submits that the amendments to claims 11 and 13 improve readability of those claims. Furthermore, the amendment to claim 12 merely rephrases the claim to overcome a rejection for lack of antecedent support and therefore does not narrow any limitation of that claim. Support for new claim 17 can be found in the specification at page 7, lines 4-12.

CLAIM REJECTIONS

35 USC 101

Claims 1-7 and 13-16 were rejected under U.S.C. §101 for double patenting over claims 1-10 of US Patent 6,674,383 (ONX-113 (APD2543-2-US)). Claims 1-7 and 13-16 have been canceled. Therefore the rejection of these claims is moot.

35 USC 112

Claim was rejected under 35 USC 112, second paragraph as being indefinite. To expedite prosecution, the Applicant has amended claim 12 to rephrase "the PWM signal" to read --the one or more voltage pulses--, antecedent support for which can be found at claim 8, line 3. The Applicant submits that this amendment merely makes explicit that which was implicit in the claim as originally filed. As such, no new matter has been entered with this amendment.

35 USC 102

Claims 1-15 were rejected under 35 USC 102(b) as being anticipated by US Patent 5,095,750 to Suzuki et al. (hereinafter Suzuki). In rejecting the claims the Examiner states that Suzuki

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discloses a MEMS or electrostatic sensor/actuator which operates using pulse width modulation functioning in a servo loop. The Applicant respectfully traverses the rejection.

Claims 1-7 and 14-16 have been canceled. Therefore the rejections are moot with respect to these claims. Claim 8 specifically recites "measuring a capacitance of the actuator when the voltage changes state". When the capacitance is measured in this way the position of the actuator can be determined whether the pulse width is varied or not (see page 2, lines 24-26). The Examiner has pointed to no specific teaching in Suzuki tending to show such a feature. As such a prima facie case of anticipation is not present with respect to claim 8.

Claims 9-13 are believed to be patentable by virtue of their dependence on claim 8. In addition, the Examiner has pointed to no specific teaching that the capacitance is measured by integrating a current to the actuator with an integrator and converting the integrated current to a digital word with an analog-to-digital converter as set forth in claim 9. Furthermore, the Examiner has not pointed to any teaching or suggestion that the integrator measures charge transferred during a transition of one or more of the voltage pulses as set forth in claim 10. Nor has the Examiner pointed to any teaching or suggestion in Suzuki that the time Δt_{pulse} is greater than or equal to the sum of time-delay of the integrator Δt_i and a conversion time of the ADC Δt_{ADC} as set forth in claim 11. In addition, the Examiner has not pointed to any teaching or suggestion that the time Δt_{pulse} is varied by modulating the duty cycle of a fast pulse train with a slower base-band signal as set forth in claim 13.

Finally, with respect to newly added claim 17, the Applicant respectfully submits that Suzuki does not teach or suggest that the pulses are guaranteed high at the beginning of the pulse period and guaranteed low at the end of the pulse period. The Applicant submits that this is a non-trivial feature since it effectively separates the measurement phase from the actuation phase, ensuring that the measurement signal of a particular sensor is not corrupted by cross-talk from adjacent devices (see page 7, lines 7-12).

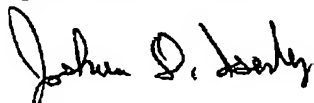
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CONCLUSION

For the reasons set forth above, the Applicants submit that all claims are allowable over the cited art and define an invention suitable for patent protection. The Applicants therefore respectfully
5 request that the Examiner enter the amendment, reconsider the application, and issue a Notice of Allowance in the next Office Action.

Respectfully submitted,



10 Joshua D. Isenberg
Reg. No. 41,088
Patent Attorney

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15 JDI PATENT
204 Castro Lane
Fremont, CA 94539
tel.: (510) 896-8328
fax.: (510) 360-9656